

Communicable Disease Report

Hawai'i Department of Health
Communicable Disease Division
Disease Outbreak and Control Division

http://www.state.hi.us/doh/resource/comm_dis/cdr.html

March/April 2003

Severe Acute Respiratory Syndrome (SARS)

Editor's Note: Understanding of this new disease and the number of cases and countries affected change daily. This article is current through April 17, 2003.

Background

Severe Acute Respiratory Syndrome (SARS) is a recently discovered respiratory illness possibly caused by a virus. It is characterized by a rapid onset following an incubation period of 2-10 days, with a fever greater than 38°C (100.4 degrees Fahrenheit) and cough, shortness of breath, or difficulty breathing.

On February 11, the Chinese Ministry of Health notified the World Health Organization (WHO) that 305 cases of acute respiratory syndrome of unknown etiology had occurred in Guangdong (formerly Canton) province during November 16, 2002 – February 9, 2003. Subsequently cases with similar clinical presentations were reported from Hong Kong; Hanoi, Vietnam; Singapore; Taiwan and Canada. Of the 3390 suspected and probable cases reported by the WHO as of April 17, 2003, 165 (4.9%) have died. In addition, secondary attack rates of >50% have been observed among health-care workers caring for patients with SARS and close family contacts of suspected cases in Guangdong, Hong Kong, Hanoi and Singapore.

The Disease

The disease has been characterized by rapid onset of high fever, myalgia, chills, rigor and sore throat, followed by shortness of breath, cough and radiographic evidence of pneumonia. The majority of patients have been adults aged 25-70 years who were previously healthy. Laboratory findings have included thrombocytopenia and leukopenia. Many patients have had respiratory stress or severe pneumonia requiring hospitalization, and several have required mechanical ventilation. Although a few close contacts of patients with SARS have developed a similar illness, the majority of contacts have remained well. Some close contacts have reported a mild febrile illness without respiratory signs or symptoms, suggesting the illness might not always progress to the respiratory phase. Among a group of 50 cases in Hong Kong, respiratory symptoms and auscultatory findings were mild. Older patients and those with lymphopenia and liver dysfunction were associated with severe disease.

The illness generally begins with a prodrome of fever. The fever often is high, sometimes associated with chills and rigors, and may be accompanied with other symptoms including headache, malaise, and myalgia. At onset, some people have mild upper respiratory symptoms. Some patients have reported diarrhea during the febrile prodrome.

After 3-7 days, a lower respiratory phase begins with the onset of a dry, nonproductive cough or dyspnea, which may be accompanied by or progress to hypoxemia. In 30-40% of cases, the respiratory illness is severe enough to require intubation and mechanical ventilation.

Chest radiographs may be normal during the prodrome and throughout the illness. However, in a substantial portion of patients, the respiratory phase is characterized by early focal interstitial infiltrates progressing to more generalized, patchy, interstitial infiltrates. Some chest radiographs from patients in the late stages of SARS also have shown areas of consolidation.

Early in the course of disease, the absolute lymphocyte count is often decreased. Overall white blood cell counts have generally been normal or decreased. At the peak of the respiratory illness approximately 50% of patients have leukopenia and thrombocytopenia (50,000-150,000/ul). Early in the respiratory phase, elevated creatine kinase levels (up to 3,000 IU/l) and hepatic transaminases (two to six times the upper limits of normal) have been noted. The majority of patients have had normal renal function. Severity of illness may be highly variable, ranging from mild illness to death.

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The absence of upper respiratory symptoms, the presence of a dry cough, and minimal auscultatory findings with consolidation on chest radiographs may alert the clinician to the possible diagnosis of SARS. The presence of lymphopenia, leucopenia, thrombocytopenia, and elevated liver enzymes and creatine kinase may also raise suspicions.

Case Definition

SUSPECT CASE.

A person with a respiratory illness of unknown etiology with onset since February 1, 2003, and the following criteria:

- Fever >100.4°F, **AND**
- One or more clinical findings of respiratory illness (e.g. cough, shortness of breath, difficulty breathing, hypoxia, or radiographic findings of either pneumonia or acute respiratory distress syndrome) **AND**
- Travel* within 10 days of onset of symptoms to an area with documented or suspected community transmission of SARS (See Interim Travel Advisory below), **OR**
- Close contact# within 10 days of onset of symptoms with a person under investigation or suspected of having SARS, or a person known to be a suspect SARS case.

* **Travel** includes transit in an airport in an area with documented or suspected community transmission of SARS.

Close contact is defined as having cared for, having lived with, or having direct contact with respiratory secretions

and/or body fluids of a patient known to be a suspect SARS case.

PROBABLE CASE.

Suspect cases with either radiographic evidence of pneumonia or respiratory distress syndrome, or evidence of unexplained respiratory distress syndrome by autopsy are considered "probable" cases by the WHO case definition.

After laboratory diagnostic test development is refined, incorporating laboratory evidence of coronavirus infection in the case definition will be important to characterize the clinical manifestations of corona virus infection and understand the relationship between infection with this novel coronavirus and SARS.

Countries Affected

From November 1, 2002 through April 17, 2003, probable and suspected cases from SARS by location included: Australia, Brazil, Canada, China (including Hong Kong), France, Germany, India, Indonesia, Italy, Japan, Kuwait, Malaysia, Mongolia, Philippines, Republic of Ireland, Romania, Singapore, South Africa, Spain, Sweden, Switzerland, Taiwan, Thailand, United Kingdom, United States, and Vietnam.

As of April 17, 2003, there were 208 suspect cases with no deaths in the U.S. from 34 states including Hawai'i (5). The suspected Hawai'i cases had mild respiratory illnesses and have been released from the hospital. One had recent travel history to Hong Kong, two to mainland China, while the other two attended one of the patients in the hospital.

Transmission

From patterns of disease spread, transmission is thought to be primarily through droplet inhalation or close face-to-face contact with another case; i.e. healthcare workers attending cases and/or close family members. However, based on increasing incidence in Hong Kong in an apartment complex as of April 2, 2003, it is possible the disease may also be transmitted through environmental sources; e.g. contamination of systems that link rooms or apartments together.

Diagnosis

Initial diagnostic testing for persons with suspected SARS should include chest radiograph, pulse oximetry, blood cultures, sputum Gram stain and culture, and testing for viral respiratory pathogens, particular influenza A & B and respiratory syncytial virus. Clinicians should save any available clinical specimens for additional testing until diagnosis is confirmed. Instructions for specimen collection are available from the CDC at <http://www.cdc.gov/ncidod/sars/pdf/specimencollection-sars.pdf>. Specimens should be forwarded to CDC by state health departments after consultation with the SARS State Support Team at the CDC Emergency Operations Center. Polymerase chain reaction (PCR), enzyme immunoassay and indirect fluorescent antibody tests to detect coronavirus have been developed and are in use in nine countries, although each test has its limitations. A PCR test developed by the CDC shows the greatest promise to detect early infections.

Etiology

Scientists collaborating internationally have identified the virus causing this illness. A previously unrecognized virus from the coronavirus family has been genetically sequenced and found to infect monkeys. However, the role an unknown paramyxovirus also isolated from SARS patients is still being investigated. Both families of virus are ubiquitous respiratory tract pathogens.

Clinicians evaluating suspected cases should use standard precautions (e.g., hand hygiene) together with airborne and contact precautions (<http://www.cdc.gov/ncidod/sars/infectioncontrol.htm>). Until the mode of transmission has been defined more precisely, eye protection should also be worn for all patient contact. Guidelines for physicians to evaluate possible SARS cases were sent by the DOH on April 11, 2003.

Treatment

The new coronavirus is being tested against various antiviral drugs to see if an effective treatment can be found. Empiric therapy should include coverage for organisms associated with any communi-

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ty-acquired pneumonia of unclear etiology, including agents with activity against by typical and atypical respiratory pathogens. Treatment choices may be influenced by severity of the illness. Infectious disease consultation is recommended.

Interim Travel Advisory

Cases in travelers have been epidemiologically linked to travel to Hong Kong and all of mainland China, Singapore and Hanoi, Vietnam. Because SARS has appeared to spread rapidly, as of April 9, 2003 the CDC advises people to postpone all but essential travel to those areas.

To reduce the risk of further international spread of SARS, WHO on March 27, 2003 recommended screening passengers departing from the following countries where local transmission has occurred:

China (Beijing, Guangdong, Shanxi & Hong Kong); Taiwan; Toronto, Canada; Singapore and Hanoi, Vietnam.

Disease Reporting & Surveillance

On March 17, 2003, the Department Of Health (DOH) issued a medical alert to primary care providers. Clinicians who suspect cases of SARS are requested to report cases to the DOH at the following:

O`ahu:	586-4586
O`ahu after hours	566-5049
Maui, Moloka`i, Lana`i	984-8213
Maui after hours	360-2575
Kaua`i	360-2575
Hawai`i, East	933-0912
Hawai`i, West	322-4877
Big Island after hours	360-2575

Since March 17, 2003 U.S. Public Health Service officials at the Honolulu Quarantine station at the Honolulu International Airport and Honolulu harbor are meeting all flights arriving in Hawai`i directly or indirectly from mainland China and

Hong Kong; Singapore; and Hanoi, Vietnam. They distribute health alert notices to air and cruise ship travelers providing advice of monitoring their health for SARS and are boarding planes and ships with travelers reported to be ill to assess whether their symptoms match the case definition of SARS. They also assist the DOH in investigation of suspected cases of SARS.

For current information, please see the CDC website at: <http://www.cdc.gov/ncidod/sars/> and the WHO website at: <http://www.who.int/csr/sars/en/>.

REFERENCES.

Centers for Disease Control and Prevention website: <http://www.cdc.gov/ncidod/sars/>

Submitted by David M. Sasaki, D.V.M., M.P.H., Veterinary Medical Officer, Disease Outbreak and Control Division, and Mona R. Bomgaars, M.D., M.P.H., Physician, Communicable Disease Division.

Smallpox Vaccine and Heart Problems

The Centers for Disease Control and Prevention (CDC) has released evidence suggesting that smallpox vaccination may be linked to cases of myocarditis and pericarditis (myopericarditis). Most reported cases occurred in the military where approximately 325,000 smallpox immunizations between December 13, 2002, and March 31, 2003, with DryVax vaccine has resulted in 11 cases of myopericarditis. One vaccinee remains hospitalized with heart failure and the other 10 have fully recovered. Two cases of myopericarditis have been reported in the 25,645 civilians receiving the DryVax immunization through March 31, 2003. Both of these patients have fully recovered. All but one of these 13 vaccinees had received the smallpox vaccination for the first time. Symptoms began two to 17 days after vaccination.

Five civilians and one military vaccinee presented with chest pain and evidence of coronary artery disease (CAD) within three weeks following smallpox vaccination. Three of these patients died from myocardial infarctions. All but one of the six vaccinees with heart problems following vaccination had either pre-exist-

ing CAD or known risk factors for CAD. CDC experts do not know at this time if smallpox vaccination causes angina or myocardial infarctions or if these problems occurred coincidentally. CDC is investigating this issue.

Myopericarditis may present as sharp chest pain, shortness of breath, fever, fatigue, dyspnea on exertion, orthopnea, tachycardia, tachypnea, congestive heart failure, edema, and poor urine output. Laboratory findings could include an abnormal electrocardiogram, radiological signs of an enlarged heart and/or congestive heart failure, elevated cardiac enzymes, or an abnormal echocardiogram showing diminished left ventricular function, enlarged heart, or pericardial effusion.

Anyone who has received the smallpox vaccine should immediately see a health care provider if experiencing chest pain, shortness of breath, or other symptoms of cardiac disease. Those who have been vaccinated and have known heart disease, should be advised to see their physician if concerned.

Future volunteers for smallpox vaccination will be screened for pre-existing heart conditions such as angina, myocardial infarction, CAD, cardiomyopathy, congestive heart failure, stroke, or transient ischemic attack (TIA). Volunteers with three or more risk factors for CAD should defer smallpox vaccination. These risk factors include hypertension, diabetes, elevated blood cholesterol, currently smoking, and a first-degree relative with a heart condition that developed before the age of 50.

For current information on smallpox, smallpox vaccination, or adverse events to the vaccine, go to www.bt.cdc.gov/agent/smallpox. Please contact Lisa Hendrickson, MD, MPH at (808) 587-6599 in Honolulu or lahendri@mail.health.state.hi.us for information on the Hawai`i Smallpox Vaccination Program.

Submitted by Lisa Hendrickson, M.D., M.P.H., Educational and Medical Training Coordinator, Bioterrorism Preparedness and Response Branch, Disease Outbreak and Control Division.

Murine Typhus in Hawai'i

More cases of murine typhus were reported in 2002 than any year since 1947. An epidemiologic review of these cases is reported below.

Definition

Murine (endemic) typhus is an acute generalized infectious disease caused by *Rickettsia typhi* and *felis*. The diseases caused by these rickettsiae are indistinguishable clinically. Typhus is found worldwide in dry temperate and subtropical seaboard regions in the United States. It is reported from three areas in the United States: Hawai'i, south Texas and Los Angeles county. On the U.S. mainland, cases occur seasonally, primarily in the summer and fall. In Hawai'i, they occur year-round. Most cases are sporadic, although outbreaks are occasionally reported.

Rats are the primary reservoirs, with mice and other small mammals possibly serving as incidental reservoirs. *R. typhi* is maintained in nature by a rat-flea-rat cycle although in southern California, *R. felis* is maintained by a cat-cat flea-opossum cycle. Transmission to humans occurs after inoculation of infected flea feces into a flea bite wound. The organism is maintained horizontally in fleas, which harbor the rickettsiae for life (one year). Inhalation of aerosolized dried infective flea feces may also transmit infection. Few patients actually recall flea exposure. Murine typhus is not transmitted person-to-person.

The incubation period ranges from 7-14 days, with an average of 12 days.

Clinical Disease

The presentation is usually that of a non-specific febrile illness. Onset is usually abrupt with fever, severe headache, chills, myalgia and nausea being the most frequently reported early findings. Approximately 50% of patients develop a diffuse macular or maculopapular rash on the trunk, arms, legs and face, although only 18% of patients have a rash at presentation. With further progression, patients continue with fever, and

may have nausea, vomiting, anorexia and cough.

Hepatomegaly and splenomegaly may occur, along with neurologic signs and symptoms, including confusion, stupor, seizures and ataxia. Other more severe manifestations include renal insufficiency, hepatic insufficiency, respiratory failure and hematemesis. Most patients require hospitalization. Fatality rates have ranged from 1-4%.

Laboratory Confirmation

Murine typhus is **confirmed** by the indirect fluorescent antibody (IFA) test for typhus group antigens by a fourfold or greater increase in titers between acute and convalescent-phase serum specimens obtained ≥ 2 weeks apart with a minimum convalescent IgG titer of 1:128.

A case is considered **probable** with single samples showing a minimum IgG or IgM IFA titer of 1:128 or with paired samples showing one sample with a 1:128 titer with no four-fold increase between acute and convalescent specimens.

The Hawai'i Department of Health (DOH) does not provide serologic testing for murine typhus. However, diagnostic testing is widely available through commercial laboratories.

Case Management

Because murine typhus can be severe or even fatal, appropriate specific therapy should begin promptly without waiting for serologic confirmation if clinical and epidemiologic clues raise suspicion for this diagnosis. Appropriate antibiotic therapy results in prompt clinical improvement and shortens the duration of fever.

1. Doxycycline (100 mg. twice daily) is the treatment of choice. It may be administered orally or intravenously and continued until 48 hours after resolution of fever or for a minimum of five days.

2. Chloramphenicol (50 mg/kg/day QID intravenously) is the drug of choice in pregnant women. Oral chloramphenicol is not currently available in the United States. Relapses have been reported with chloramphenicol.
3. There have been reports of successful treatment of murine typhus with various quinolone antibiotics such as ciprofloxacin.

2002 Typhus Cases in Hawai'i

In 2002, 47 laboratory-positive cases of murine typhus were reported to the DOH, the most since 1947. Epidemiologic evidence indicated that all cases were infected in Hawai'i. Thirty-five cases were from Maui, six were from Moloka'i, three from O'ahu, two from Kaua'i, and one from the Big Island (Figure 1). The median age was 38 years (range 1 to 68 years); 28 (60%) were male. Nineteen (54%) of the Maui cases resided in Kihei, a known hyper-endemic area (Figure 2). All six of the Moloka'i cases resided in northern central Moloka'i, while the Kaua'i and O'ahu cases lived on the leeward sides of the islands. The Big Island case resided in Kailua-Kona. Eighty-three percent of the cases occurred during the summer and fall (Figure 3).

The most common symptoms reported among the 47 cases in 2002 are listed in Table 1. below.

Table 1. Signs and Symptoms
N = 47

Sign/Symptom	% Cases
Fever	98
Malaise	89
Headache	87
Myalgias	81
Anorexia	81
Chills	81
Arthralgias	72
Nausea	66
Vomiting	54
Backache	53
Abdominal Pain	51
Stiff Neck	47
Rash	45

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Murine Typhus in Hawai'i

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A skin rash was reported in 45% of the cases, most commonly described as macular, papular, or maculopapular in appearance. Eighteen (38%) of the cases were hospitalized for a median of seven days (range: 2-41 days); the median age of the hospitalized cases was 48 years (range: 9-50 years). There were no fatalities. However, moderate to severe disease manifestations were observed, including acute renal failure (two cases), gastrointestinal bleeding (two cases), meningitis (two cases), encephalitis or encephalopathy (three cases), congestive heart failure with pleural effusion (one case), and syncope associated with ventricular tachycardia (one case).

Forty-five of the 47 cases had a CBC drawn at initial clinical presentation. The median WBC was 6,800/mm³ (range: 2,200-23,600/mm³), with a left shift. The median hematocrit was 38.9% (range: 24.8-49.4%), and the median platelet count was 153,000/mm³ (range: 25,000-437,000/mm³). Serum chem-

istry findings include a median SGOT of 72 U/L (range: 16-530 U/L; n=34), a median SGPT of 68 U/L (range: 15-610 U/L; n=34), and a median albumin of 3.5 gm/dL (range: 2.3-4.3 gm/dL; n=25).

Criteria to Initiate an Investigation

When murine typhus is suspected, the following criteria are used to initiate an investigation:

- A positive typhus group diagnostic test (1:128 IgM and/or IgG titers on a Indirect Fluorescent Antibody test).
- All patients with positive tests are investigated for clinical and exposure information. Exposure sites are trapped for rodents and tested for murine typhus by the DOH Vector Control Branch. Rodent and flea control measures are recommended to patients and their families.

Outbreak Control Measures

This outbreak may have been associated with a concurrent mouse explosion on Maui. Increased mice populations occur

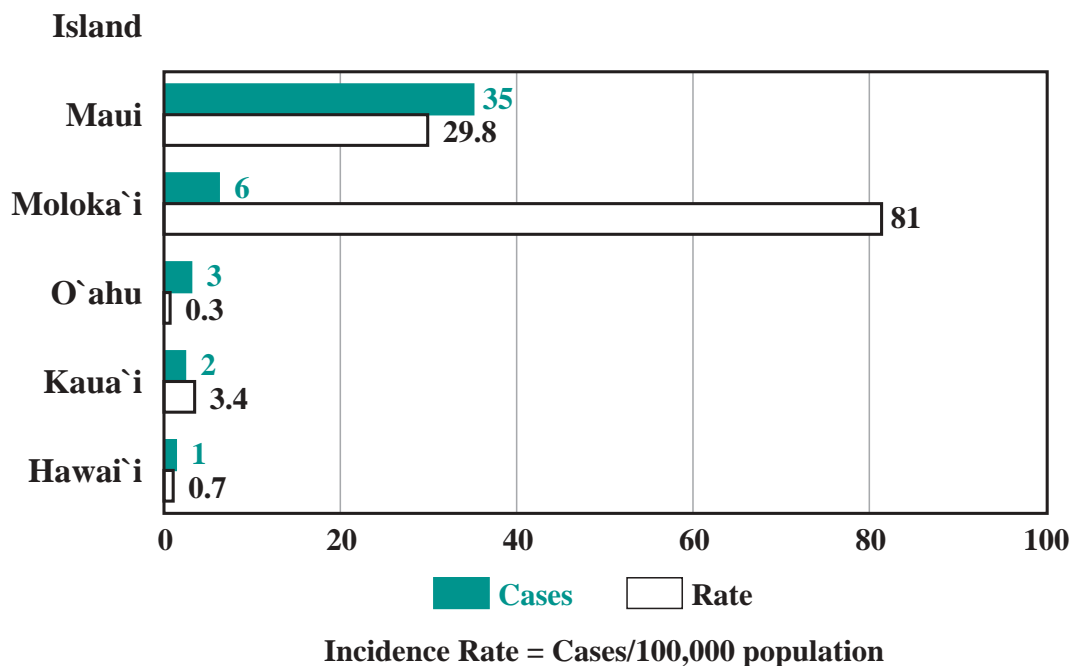
periodically and are associated with heavy rainfall providing an abundance of food, followed by drought, which results in a migration of mice in search of food. Further studies are needed to establish such an association and to test the above hypothesis. Intensified control measures implemented by the DOH Vector Control branch may have helped reduce human exposures.

Prevention is focused on rodent and flea control around premises of exposure, including flea control on pets.

- Rodent trapping and rat proofing of homes should be undertaken. The DOH Vector Control branch can provide recommendations for the best methods of reducing risk of exposure. For more information, please call (808) 483-2535 in Honolulu.
- Flea eradication will help with control. The Vector Control Branch may assist with eradication efforts.

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**Fig. 1. Murine Typhus in Hawai'i: 2002
Cases and Incidence Rates by Island**



Murine Typhus in Hawai'i

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- When cleaning rodent-infested areas, one should wear protective clothing such as a mask or respirator to avoid inhalation of dust containing flea feces. Skin should be protected from flea feces by covering exposed areas with appropriate clothing such as long sleeved shirts, long pants, socks, shoes and use of topical insect repellants.

Reporting Requirements

The Hawai'i DOH Administrative Rules, Chapter 156, Communicable Diseases, Exhibits A, B, & C requires physicians and laboratories to report murine typhus cases. All cases are investigated by the Disease Investigations Branch.

For more information on the disease, its distribution, treatment and prevention in Hawai'i, please call the Hawai'i DOH at (808) 586-4586 in Honolulu.

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Submitted by David M. Sasaki, D.V.M., M.P.H., Veterinary Medical Officer, Disease Outbreak and Control Division, Paul Kitsutani, M.D., M.P.H., Medical Officer, Centers for Disease Control and Prevention, and Mona R. Bomgaars, M.D., M.P.H., Physician, Communicable Disease Division.

Fig. 2. Murine Typhus on Maui: 2002 Cases and Incidence Rates by District
N = 35

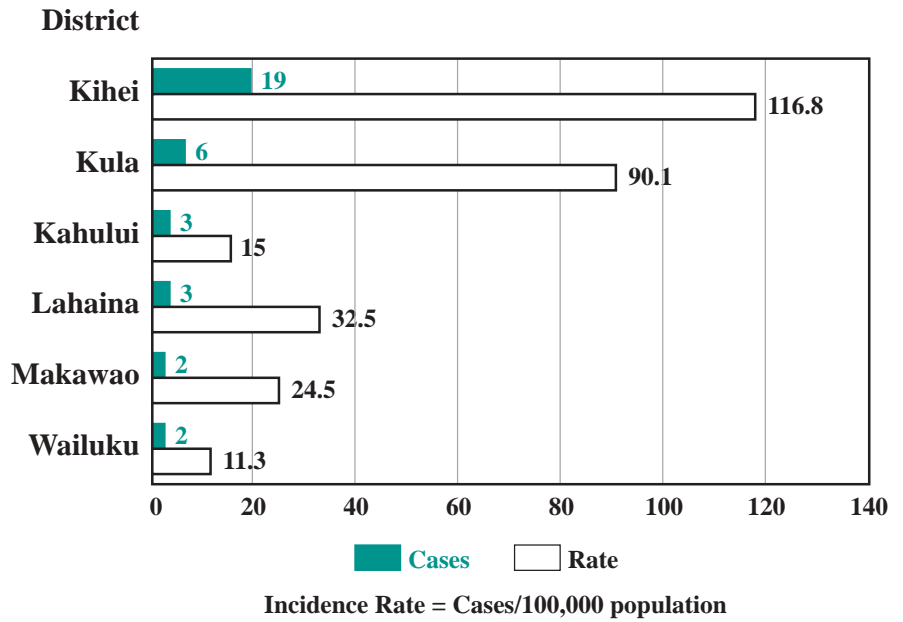
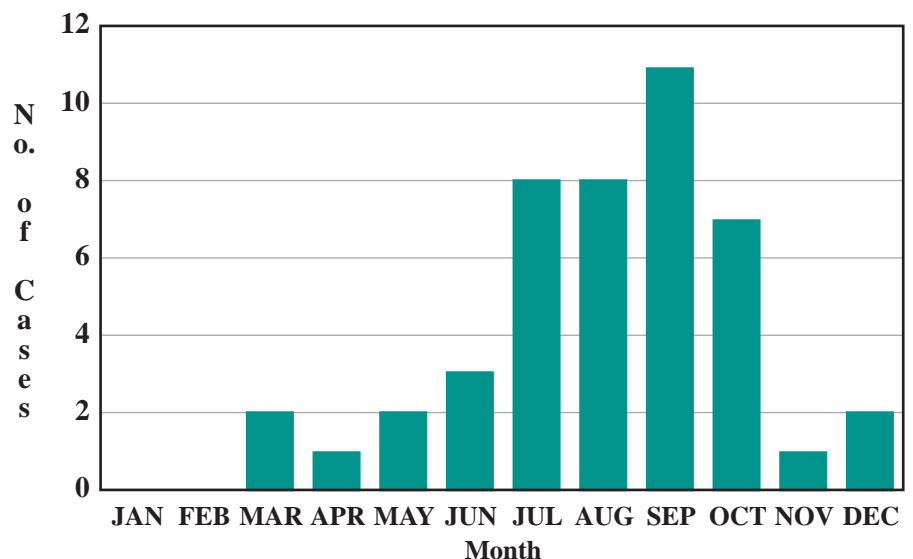


Fig. 3. Murine Typhus in Hawai'i: 2002 By Month of Onset
N = 47



Recommended Childhood and Adolescent Immunization Schedule – United States, 2003

The recommended Childhood and Adolescent Immunization Schedule for 2003 was published in the January 31, 2003 issue of MMWR. The following is a synopsis of the recommendations.

Each year, the Centers for Disease Control and Prevention's (CDC) Advisory Committee on Immunization Practices (ACIP) reviews the recommended childhood and adolescent immunization schedule to ensure that it is current and contains revised recommendations for the use of licensed vaccines, including those newly licensed. The recommended childhood immunization schedule for 2003 has remained the same in content and format since January 2002. The current recommendations and format have been approved by the ACIP, the American Academy of Pediatrics (AAP), and the American Academy of Family Physicians (AAFP).

Catch-Up Childhood and Adolescent Immunization Schedule

A new catch-up immunization schedule for children and adolescents who start late or who are more than one month behind is presented for the first time (see enclosed Tables 1 and 2). Minimum ages and minimum intervals between doses are provided for each of the routinely recommended childhood and adolescent vaccines. The schedule is divided into two age groups, children aged four months to six years and children/adolescents aged seven years to 18 years.

Hepatitis B Vaccine

The schedule indicates a preference for administering the first dose of hepatitis B vaccine to all newborns soon after birth and before hospital discharge. Only monovalent hepatitis B vaccine can be used for the birth dose. Either monovalent or combination vaccine can be used

to complete the series. Four doses of hepatitis B vaccine can be administered to complete the series when a birth dose is given. In addition to receiving hepatitis B immune globulin (HBIG) and the hepatitis B vaccine series, infants born to HBsAg-positive mothers should be tested for antibody to HBsAg (anti-HBs) at age nine months to 15 months to identify those with chronic HBV infection or those who might require revaccination.

Influenza Vaccine

In addition to the recommendation to administer annual influenza vaccine to children at high risk, healthy children aged six – 23 months are encouraged to receive influenza vaccine when feasible. Children in this age group are at increased risk for influenza-related hospitalizations.

Inactivated Poliovirus Vaccine

The inactivated poliovirus (IPV) vaccine footnote has been removed from the Recommended Childhood and Adolescent Immunization Schedule, reflecting the cessation of the use of oral poliovirus (OPV) vaccine in the United States. All children should receive four doses of IPV at age two, four, and six to 18 months, and at age four to six years. For children who received an all-IPV or all-OPV series, a fourth dose is not necessary if the third dose was administered at age four years or older. If both OPV and IPV were administered as part of a series, a total of four doses should be administered regardless of the child's current age. Routine poliovirus vaccination is not generally recommended for persons aged 18 years or older residing in the U.S.

Vaccine Supply Recommendations

As a result of vaccine supply shortage, deferral of some doses of pneumococcal

conjugate vaccine (PCV) has been recommended. Health-care providers should record patients for whom vaccination has been deferred and should contact them once the supply has been restored. Supplies of tetanus and diphtheria toxoids (Td) vaccine; diphtheria and tetanus toxoids and acellular pertussis (DTaP) vaccine; measles, mumps, and rubella (MMR) vaccine; and varicella vaccine in the United States are sufficient to permit the resumption of the routine schedule. The range of recommended ages for the Td vaccine has been extended to 18 years to emphasize that the vaccine can be administered during any visit if at least five years have elapsed since the last dose of tetanus and diphtheria toxoid-containing vaccine.

Vaccine Information Statements

The National Childhood Vaccine Injury Act requires that all health-care providers give parents or patients copies of Vaccine Information Statements before administering each dose of the vaccines listed in the schedule.

For further information, please see the enclosed copy of the Recommended Childhood and Adolescent Immunization Schedule – United States, 2003, call the Hawai'i Immunization Branch in Honolulu at (808) 586-8332, or visit the CDC National Immunization Program website at <http://www.cdc.gov/nip>.

Reference:

Centers for Disease Control and Prevention. Recommended Childhood and Adolescent Immunization Schedule – United States, 2003. *MMWR* 2003; 52:Q1-Q4.

H5N1 Bird/Human Influenza Alert

On February 19, 2003, the World Health Organization (WHO) Global Influenza Program reported the identification of avian influenza virus (H5N1) from a nine year-old male, Hong Kong resident. The boy became ill on February 9 and was admitted to a Hong Kong hospital on February 12. The boy had traveled with his mother and his two sisters to Fujian Province (China). His eight-year old sister became ill on January 28 and died in a Fujian hospital on February 4. Their father joined the family on January 31, became ill on February 7, returned to Hong Kong on February 10 and was admitted to the hospital the following day. The father died of [pneumonia?] on February 16 and his infection with influenza A H5N1 was confirmed three days later. The boy's mother was ill but has since recovered and the boy appears to be recovering. WHO is collaborating closely with health authorities in Beijing and

Hong Kong to provide support for ongoing medical and epidemiological investigations.

An (H5N1) influenza A virus was first seen in humans in 1997 when an outbreak of 18 cases caused six deaths in Hong Kong. Until then, this virus was seen only in birds including chickens and ducks. Following confirmation of the initial August 1997 case, a two-year-old child, an investigation was launched and surveillance was increased. In December 1997, all chickens, which were thought to be the source of this outbreak of influenza in humans, were slaughtered in Hong Kong. No further cases of the disease were reported in humans until now. Although there are currently no cases identified outside of Hong Kong, the Hawai'i Department of Health (DOH) as a cautionary measure, has enhanced its

routine surveillance. On February 21 the Disease Outbreak Control and Surveillance Division issued a Health Advisory via facsimile and email to all physicians in the State recommending that special consideration be given to severe influenza cases, influenza-like patients recently returning from Hong Kong or surrounding areas, or influenza-like patients with contacts with similar travel history. Physicians should report all cases meeting any of these criteria to the DOH immediately.

Updates may be accessed at the CDC Website at: <http://www.cdc.gov/ncidod/diseases/flu/fluivirus.htm>.

Submitted by Tracy L. Ayers, M.S., Influenza Surveillance Coordinator, Disease Investigations Branch, Disease Outbreak and Control Division.

Rabies: A Continuing Problem

Hawai'i is the only state that is rabies-free. Separate bills were recently introduced in the legislature to eliminate the pre-arrival holding period for incoming pets, eliminate any holding period after the animal's arrival, and one that would have eliminated the funding source for the Department of Agriculture's animal quarantine program. None of the bills advanced beyond initial public hearings.

Hawai'i's animal quarantine program has reduced the risk of rabies from entering the state, and has also intercepted entry of ticks found on quarantined animals that are known to transmit diseases on the

U.S. mainland, e.g. Rocky Mountain Spotted Fever and Lyme Disease. Doing away with any post-arrival holding period could also enable West Nile disease to enter the state and become established in our local mosquito population. Dogs and cats are susceptible to West Nile disease, and the viremia observed in cats is high enough for them to be a source of transmission to mosquitoes.¹

A recent article² illustrates the continuing problems with rabies in pets in the rest of the United States. In Nebraska, a spaniel-type hunting dog was found and adopted in December 2002. However

the owner observed it had some behavior problems and turned it in to a shelter for euthanasia. It appeared to be healthy and well-cared for. On February 11, 2003 when attempts were made to restrain the animal for euthanasia, the animal "went ballistic," and bit the attending veterinarian. The shelter manager had her head close to the animal, trying to remove its teeth from the veterinarian's hand when saliva from the dog got into her mouth. The dog was subsequently tested for rabies because it had no known vaccination history. The positive result was reported

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on February 14, 2003. In addition to the two people who restrained and euthanized the dog, 10 volunteers at the shelter who had been kissed and licked by the dog were administered rabies post-exposure prophylaxis (PEP), consisting of a dose of rabies immune globulin, and five doses of rabies diploid-cell vaccine administered over 28 days. It is likely the dog had the "dumb or paralytic" form of rabies, vs. the better known "furious" form. Paralytic rabies is seen in 75% of

dog rabies, while the ratio is the opposite in feline rabies.

Three other cases of rabies have been confirmed in 2003 in Nebraska, including a dog and two skunks. Two people were exposed to rabies while caring for the dog and also received PEP. In 2002, 27 cases of animal rabies were reported in that state.

Rabies PEP for humans is very expensive, with an estimated cost of \$3000/person. Lucky we live Hawai'i!

REFERENCES

1. Komar, Nicholas, Centers for Disease Control and Prevention, 2003, Personal Communication.
2. Rabies, Canine – USA (NE) – ProMed-mail (International Society of Infectious Diseases) post, February 19, 2003.

Submitted by David M. Sasaki, D.V.M., M.P.H., Veterinary Medical Officer, Disease Outbreak & Control Division.

2002 Surveillance Summary

The following are provisional 2002 state and county communicable disease totals by date of report and incidence rate (cases/100,000 population). The diseases listed correspond to those in the Communicable Disease Surveillance graph that appears on page 11. Incidence rates are in **bold** print. Changes in state case totals from 2001 are also listed.

Disease	2002 Cases and Incidence Rates by State and County										
	State	Change#	Rate	Honolulu	Rate	Hawaii	Rate	Maui	Rate	Kauai	Rate
AIDS	136	-2	2.1	99	11.3	14	9.4	18	14.0	5	8.6
Campylobacteriosis	906	150	74.8	642	73.3	111	74.7	109	85.0	44	75.3
Chlamydia	4523	488	373.3	3794	433.0	313	210.5	309	241.0	104	177.9
Giardiasis	89	-25	7.9	55	6.3	18	12.1	13	10.1	3	5.1
Gonorrhea	738	134	60.9	684	78.1	22	14.8	21	16.4	11	18.8
Hepatitis A	36	19	1.6	23	2.6	3	2.0	7	5.5	1	1.7
Salmonellosis	282	-76	25.1	186	21.2	48	32.3	35	27.3	13	22.2
Tuberculosis	151	3	12.5	124	14.2	9	6.1	14	10.9	4	6.8
Ciguatera Poisoning	61	3	5.0	6	0.7	6	4.0	13	10.1	31	53.0
Dengue Fever,											
Autochthonous	3	-110	0.2	1	0.1	0	0	2	1.6	0	0
Imported	8	-24	0.7	5	0.6	0	0	2	1.6	1	1.7
Hansen's Disease	11	-13	0.9	8	0.9	3	2.0	0	0	0	0
Acute Hepatitis B	15	-7	1.2	13	1.5	1	0.7	1	0.8	0	0
Leptospirosis*	36	3	3.0	11	1.3	17	11.4	0	0	8	13.7
Measles	3	-5	0.2	3	0.6	0	0	0	0	0	0
Pertussis	17	-25	1.4	12	1.4	0	0	0	0	3	5.1
Rubella	1	-1	0.1	1	0.1	0	0	0	0	0	0
Syphilis, Primary and	10	0	0.8	9	1.0	1	0.7	0	0	0	0
Secondary											

= Change in the numbers of cases from 2001.

* Incomplete

A Tribute to Dr. Robert Worth



Dr. Robert M. Worth passed away on January 16, 2003 at the age of 78. He was one of the most influential [if not the most influential] persons in the development of public health education in the state of Hawai'i. He was not only dedicated to the health of the people of Hawai'i but had a passion for the fate of Hansen's Disease patients banned from society and relegated to a life of isolation at Kalaupapa on the island of Moloka'i. He had similar concerns for individuals afflicted with AIDS.

Dr. Worth was born in China, the son of a Presbyterian missionary family. He was educated at the University of California-Berkeley and San Francisco, Harvard University School of Public Health, and obtained his Ph.D. in epidemiology from the University of California-Berkeley. He was deeply moved by people affected by the ravages of infectious diseases, and lost a sister to polio in the days prior to availability of effective vaccinations. He was a deeply religious person who lived his convictions.

Throughout his career, he had close ties to the Department of Health (DOH). His first position in Hawai'i was as a physician to the Hansen's Disease patients at Kalaupapa. He subsequently served as Kaua'i District Health officer before moving to the University of Hawai'i School of Public Health where he was

professor of epidemiology from 1963-1985. Following a brief stint at the Centers for Disease Control, he completed his professional career at the DOH in the position he most coveted: Chief of the Communicable Disease Division. He retired in 1992.

His research interests centered primarily on Hansen's Disease and he conducted fieldwork in Micronesia, New Guinea, Hong Kong and Nepal. He was an advisor on leprosy to the World Health Organization. Believing in the practical application of science in daily living, he also was an advocate for the patients at the Kalaupapa settlement. In that role, he was instrumental in discontinuing the mandatory isolation of newly diagnosed leprosy patients in 1969. As Chief of the Communicable Disease Division, he promoted a greater independence and self-government for the patients of the settlement.

The breadth of his public health concern was manifest in his establishing the Health Service Research Center at the Pacific Health Research Institute, and as a director of the Honolulu Heart Program that pioneered research into the effects of genetics, nutrition and culture on cardiovascular disease and stroke.

It was as an educator that his influence was most widespread. While with the

University of Hawai'i School of Public Health, some 2300 students passed through his classes, including 127 students in the epidemiology program in his role as professor or academic committee member. He personally chaired the academic committees of 69 epidemiology students, including many current and past employees of the DOH and former students who are in high health positions throughout the Pacific basin. Among the most notable of his students include former Director of Health, Bruce S. Anderson and Dr. Jong Wook Lee from Korea. Anderson currently is Environmental Health Program director at the John A. Burns School of Medicine (JABSOM), and was the first student granted a Ph.D. degree in epidemiology by the School of Public Health. Lee was a 1981 graduate who was recently nominated by the World Health Organization's Executive Board for the post of Director-General.

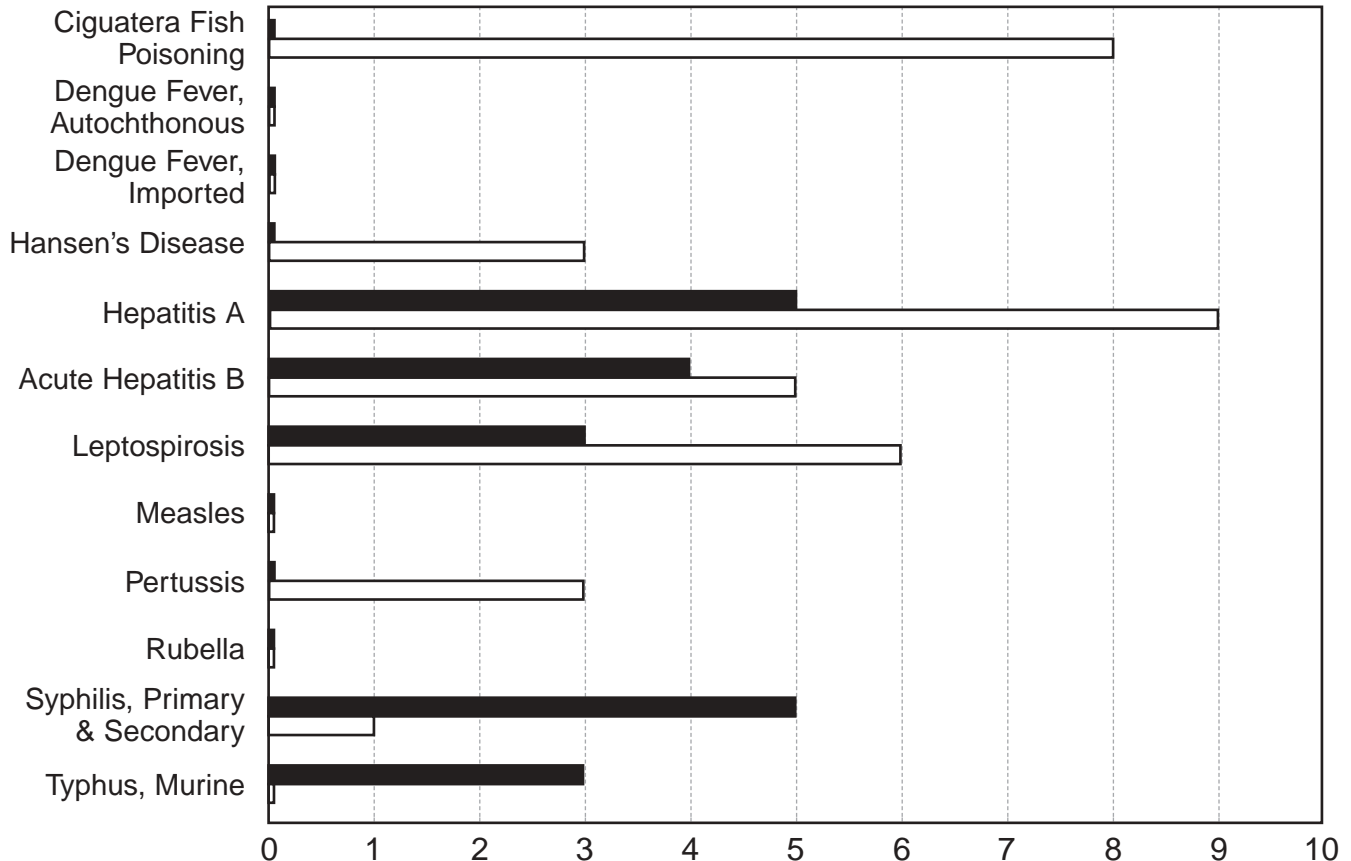
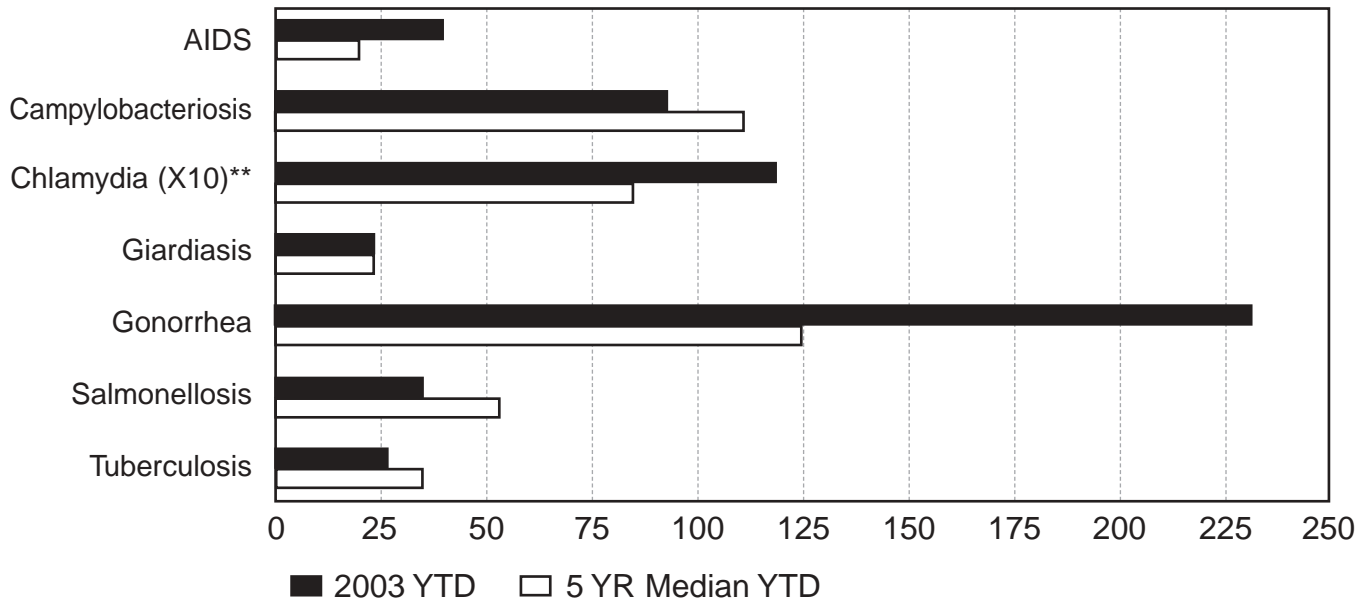
Alan R. Katz, M.D., M.P.H., associate professor of epidemiology at the Department of Public Health, JABSOM, said "Dr. Worth was a truly inspirational individual. I had the pleasure of interacting with him as a student in the School of Public Health and as a colleague at the DOH. His reputation at the University as an outstanding educator was well deserved. His lectures were both informative and captivating. He stood in front of the class without notes and shared his stories of epidemiologic principles in action. His lectures were presented to the students as a gift. I will always remember after one particularly riveting lecture, the class broke into spontaneous applause; something rarely seen in a 'required' graduate school course. He inspired a generation of public health students and will be sorely missed."

He is survived by his wife Annie, and sons Brian M. Worth and Jonathan L. Worth.

Submitted by David M. Sasaki, D.V.M., M.P.H., and Mona R. Bomgaars, M.D., M.P.H., Physician, Communicable Disease Division.

Communicable Disease Surveillance

Selected Diseases by Date of Report* Hawai'i, 2003 Year-to-date Through March



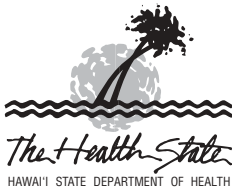
* These data do not agree with tables using date of onset or date of diagnosis.

**The number of cases graphed represent 10% of the total number reported.

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Communicable Disease Report

Paul V. Effler, M.D., M.P.H., Chief, Communicable Disease Division

March/April 2003

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